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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,308	09/01/2004	Atsushi Nakanishi	3030 US0P	8302

23115 7590 11/15/2006

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EXAMINER	
HISSONG, BRUCE D	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/506,308	NAKANISHI ET AL.	
	Examiner	Art Unit	
	Bruce D. Hissong, Ph.D.	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/1/04, 8/10/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-4, 14, and 37, and the polypeptide of SEQ ID NO: 1, in the reply filed on 10/16/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). The requirement for restriction is therefor deemed proper and is made FINAL.

2. The Applicants cancelled claims 2-13 and 15-42. Therefore, claims 1 and 14 are pending and are the subject of this office action.

Priority

The instant application, with a filing date of 9/1/2004, is a 371 of PCT/JP03/02564, filed on 3/5/2003. The instant application also claims priority to foreign applications JAPAN 2002-61133, filed on 3/6/2002, JAPAN 2002-98852, filed on 4/1/2002, and JAPAN 2002-184883, filed on 6/25/2002. Although certified copies of these foreign applications have been submitted, said copies are not in English. Therefore, the earliest effective filing date for the instant application has been determined to be 3/5/2003. If Applicants provide certified English translations of the foreign priority documents, the priority date will be reconsidered.

Information Disclosure Statement

The information disclosure statements received on 9/1/2004 and 8/10/2005 have been fully considered by the Examiner.

Claim Objections

1. Claims 1 and 14 are objected to for the following informality: Claim 1 recites an isolated protein "having" the amino acid sequence of SEQ ID NO: 1. The term "having" could be

interpreted as "comprising", "consisting of", or something else. For purposes of examination, the term "having" has been interpreted as "comprising".

2. Claim 14 is objected to for the following informality: there is an extra space between the word "protein" and the subsequent comma. Additionally, the Examiner suggests the syntax of the claim can be improved by amending the claim to recite "A pharmaceutical composition comprising.....".

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 14 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a specific, substantial and credible asserted utility or a well-established utility. The claims are drawn to an isolated protein having the amino acid sequence of SEQ ID NO: 1, and a pharmaceutical comprised of the protein of SEQ ID NO: 1. The invention encompassed by these claims has no apparent or disclosed patentable utility. This rejection is consistent with the current utility guidelines, published 1/5/01, 66 FR 1092. The instant application has provided a description of an isolated protein (SEQ ID NO: 1) that exhibits homology to organic anion transporters (p. 89, line 34 – p. 90, line 1). However, the instant application does not disclose a specific and substantial biological role of the protein of SEQ ID NO: 1, or its significance.

The Applicants have putatively identified the protein of their invention as an organic anion transport protein, which is similar to the SLC21 and OATP organic transporter families (p. 89, line 34 – p. 90, line 7). However, the instant application does not disclose the biological role of the claimed protein or its significance, and the assertion that the protein of the present invention is an organic anion transporter protein is not predictive of a use. The specification does not disclose any function or disease state associated with altered levels of forms of the polypeptide of SEQ ID NO: 1. The Applicants have only based the function of the protein of the present invention on homology to other organic anion transporters, such as SLC21A12 and OATPRP4. Therefore the specific function of this protein would be speculative, and significant, further experimentation would be required of the skilled artisan to identify a dysfunction or

disease that is associated with the polypeptide of SEQ ID NO: 1. There is no disclosure, for example, of any symptoms associated with a disease or function of this polypeptide.

The specification discloses that the protein of SEQ ID NO: 1 (TCH229) exhibits 41% sequence homology to the known SLC21 family member SLC21A12, and 36% homology to the OATP family member OATPRP4 (p. 89, line 34 – p. 90, line 7). Based on the structural similarity, the specification asserts that the newly disclosed SEQ ID NO: 1 has a similar activity. The assertion that the disclosed protein has biological activities similar to known organic anion transporters cannot be accepted in the absence of supporting evidence, because generally, the art acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases. For example, Skolnick *et al* (2000, *Trends in Biotech.* 18:34-39) state that knowing the protein structure by itself is insufficient to annotate a number of functional classes, and is also insufficient for annotating the specific details of protein function (see Box 2, p. 36). Similarly, Bork (2000, *Genome Research* 10:398-400) states that the error rate of functional annotations in the sequence database is considerable, making it even more difficult to infer correct function from a structural comparison of a new sequence with a sequence database (see especially p. 399). Such concerns are also echoed by Doerks *et al.* (1998, *Trends in Genetics* 14:248-250) who state that (1) functional information is only partially annotated in the database, ignoring multi functionality, resulting in underpredictions of functionality of a new protein and (2) overpredictions of functionality occur because structural similarity often does not necessarily coincide with functional similarity. Smith *et al.* (1997, *Nature Biotechnology* 15:1222-1223) remark that there are numerous cases in which proteins having very different functions share structural similarity due to evolution from a common ancestral gene.

Brenner (1999, *Trends in Genetics* 15:132-133) argues that accurate inference of function from homology must be a difficult problem since, assuming there are only about 1000 major gene superfamilies in nature, then most homologs must have different molecular and cellular functions. Finally, Bork *et al.* (1996, *Trends in Genetics* 12:425-427) add that the software robots that assign functions to new proteins often assign a function to a whole new protein based on structural similarity of a small domain of the new protein to a small domain of a known protein. Such questionable interpretations are written into the sequence database and are then considered facts.

Therefore, based on the discussions above concerning the specific examples of structurally similar proteins that have different functions, along with the art's recognition that one cannot rely upon structural similarity alone to determine functionality, the specification fails to teach the skilled artisan the utility of the protein of SEQ ID NO: 1, wherein said protein is only known to be homologous to other known organic anion transporters. Thus, the instant claims are drawn to a protein that has an undetermined function or biological significance. There is no actual and specific significance that can be attributed to said TCH229 protein (SEQ ID NO: 1) identified in the specification. For this reason, the instant invention is incomplete. In the absence of knowledge of the biological significance of this protein, there is no immediately obvious patentable use for it. To employ the protein of the instant invention in the identification of substances which bind to and/or mediate activity of the said TCH229/SEQ ID NO: 1 is clearly to use it as the object of further research, which has been determined by the courts to be a non-patentable utility. The specification does assert that the protein of SEQ ID NO: 1 can be used as an antigen to produce antibodies specific for said protein. However, this is not a specific utility because virtually any protein can be used in such a manner. The Applicants also set forth a number of diseases/conditions that can theoretically be treated by activators or inhibitors of the protein of SEQ ID NO: 1 (for example, p. 35, line 18 – p. p. 36, line 17). However, because the biological role of the claimed protein is not disclosed, and there is no disease that is disclosed as being associated with abnormal levels or activity of the claimed protein, these potential applications also lack utility. Therefore, since the instant specification does not disclose a "real-world" use for said TCH229/SEQ ID NO: 1 protein, the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. 101 as being useful.

The instant situation is directly analogous to that of which was addressed in Brenner v. Manson, 148 U.S.P.Q. 689 (Sus. Ct, 1966), in which a novel compound which was structurally analogous to other compounds which were known to possess anticancer activity was alleged to be potentially useful as an antitumor agent in the absence of evidence supporting this utility. The court expressed the opinion that all chemical compounds are "useful" to the chemical arts when this term is given its broadest interpretation. However, the court held that this broad interpretation was not the intended definition of "useful" as it appears in 35 U.S.C. 101, which required that an invention must have either an immediate obvious or fully disclosed "real-world" utility. The court held that:

"The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility," "[u]nless and until a process is refined and developed to this point - where specific benefit exists in currently available form - there is insufficient justification for permitting an applicant to engross what may prove to be a broad field," and "a patent is not a hunting license," "[i]t is not a reward for the search, but compensation for its successful conclusion."

There is little doubt that, after complete characterization, this protein will probably be found to have a patentable utility. This further characterization, however, is part of the act of invention and, until it has been undertaken, the Applicants' claimed invention is incomplete.

Claim Rejections - 35 USC § 112, first paragraph, enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 14 have been rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific, substantial and credible asserted utility or a well-established utility (see above). Claims 1 and 14 are therefore also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific, substantial and credible asserted utility or a well-established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Conclusion

No claim is allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce D. Hissong, Ph.D., whose telephone number is (571) 272-3324. The examiner can normally be reached M-F from 8:30 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol, Ph.D., can be reached at (571) 272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BDH
Art Unit 1646

ROBERT S. LANDSMAN, PH.D.
PRIMARY EXAMINER